

REMARKS

Claims 1-22 are pending. Claims 23-25 have been cancelled. Claims 1, 9, and 14 have been amended.

Rejection of Claims under 35 U.S.C. § 112

Claims 1-25 stand rejected under 35 U.S.C. § 112, second paragraph. The applicants respectfully traverse in part these rejections.

Claim 1 has been amended to address the Examiner's rejection regarding antecedent basis for the term "a laser diode" in line 7 of the claim. The applicants respectfully submit that this amendment in no way changes the scope of coverage of claims 1-8. Additionally, in his Office Action of October 4, 2002, p. 2, ¶2, the Examiner states "the claim is missing a monitoring and determining step for determining whether the system should be operated in the low power mode or the standard mode." The applicants respectfully disagree. There is nothing, either in claim 1 itself or in the specification indicating that the steps identified by the Examiner are in any way required for claim 1 to be definite. Moreover, if it is the Examiner's position that the identified steps are "essential steps," the Examiner should provide "the rationale for considering the omitted steps critical or essential," as required by MPEP § 706.03(d) and particularly the instructions for use of form paragraph 7.34.12. In the present rejection, the Examiner has provided no such rationale. Finally, in his Office Action of October 4, 2002, p. 2, ¶2, the Examiner states "[t]he claim also recites the laser diode configured to transmit signal in the low power mode and standard mode. It is unclear how to configure, which render the claim confusing, vague, and indefinite." The applicants respectfully disagree. The applicants respectfully submit that the meaning of the phrase "the laser diode configured to transmit signals in the low power mode and the standard mode" is well within the skill level of one having ordinary skill in the art, particularly when read in combination with the applicants specification on, for example, pages 2 and 6-7. Accordingly, the applicants respectfully submit that claims 1-8 are definite.

Claim 9 has been amended to address the Examiner's rejection regarding possible confusion between the terms "a temperature within a predetermined range of

temperatures” and “a temperature that corresponds to a predetermined wavelength of light output from the laser diode.” The applicants respectfully submit that this amendment in no way changes the scope of coverage of claims 9-13. Additionally, in his Office Action of October 4, 2002, p. 2, ¶3, the Examiner states “the claim fails to provide the means for monitoring and determining the temperature/wavelength of the laser.” The applicants respectfully disagree. There is nothing, either in claim 9 itself or in the specification indicating that the elements identified by the Examiner are in any way required for claim 9 to be definite. Moreover, if it is the Examiner’s position that the identified elements are “essential elements,” the Examiner should provide “the rationale for considering the omitted elements critical or essential,” as required by MPEP § 706.03(d) and particularly the instructions for use of form paragraph 7.34.13. In the present rejection, the Examiner has provided no such rationale. Accordingly, the applicants respectfully submit that claims 9-13 are definite.

Claim 14 has been amended to address the Examiner’s rejection regarding “a choice of mode.” The applicants respectfully submit that this amendment in no way changes the scope of coverage of claims 14-22. Additionally, in his Office Action of October 4, 2002, p. 3, ¶1, the Examiner states “[t]he claim fails to provide monitoring and determining steps determining whether the system should be operated in the first mode or the second mode.” The applicants respectfully disagree. It is unclear to the applicants why an apparatus claim would, in any circumstance, need to recite certain steps. Moreover, there is nothing, either in claim 14 itself or in the specification indicating that the steps identified by the Examiner are in any way required for claim 14 to be definite. If it is the Examiner’s position that the identified steps are “essential steps,” the Examiner should provide “the rationale for considering the omitted steps critical or essential,” as required by MPEP § 706.03(d) and particularly the instructions for use of form paragraph 7.34.12. In the present rejection, the Examiner has provided no such rationale. Finally, in his Office Action of October 4, 2002, p. 3, ¶1, the Examiner states “[t]he claim recites wherein the thermo electric cooler is responsive to inputs from the temperature circuit, the input **identifying one** of at least a first mode and second mode, it is unclear statement.” Emphasis in original. The applicants respectfully disagree. The referenced portion of claim 14 states “the inputs identifying one of at least a first mode and a second

mode.” The applicants respectfully submit that the meaning of the claim term is clear: the inputs identify one mode, and that one mode is from a set that includes (at least) a first mode and a second mode, i.e., there may be other modes in addition to the first mode and the second mode. Accordingly, the applicants respectfully submit that claims 14-22 are definite.

Claims 23-25 have been cancelled.

Rejection of Claims under 35 U.S.C. § 102/103

Claims 1, 6-10, and 23 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Jang, U.S. Patent No. 5,521,375. Claims 2-3 and 11-12 stand rejected under 35 U.S.C. § 103 as being unpatentable over Jang in view of Abeles et al., U.S. Patent No. 6,014,237 (Abeles). Claim 4 stands rejected under 35 U.S.C. § 103 as being unpatentable over Jang in view of Masuda et al., U.S. Patent No. 5,303,250 (Masuda). Claims 5 and 13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Jang in view of Tyrrell et al., U.S. Patent No. 5,185,736 (Tyrrell). Claims 14, 16, 18, 20, and 22 stand rejected under 35 U.S.C. § 103 as being unpatentable over Jang in view of AuYeung et al., U.S. Patent No. 5,604,758 (AuYeung). Claims 15 and 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Jang in view of AuYeung and further in view of Abeles. Claim 19 stands rejected under 35 U.S.C. § 103 as being unpatentable over Jang in view of AuYeung and further in view of Tyrrell. Claim 21 stands rejected under 35 U.S.C. § 103 as being unpatentable over Jang in view of AuYeung and further in view of Byer et al., U.S. Patent No. 4,809,291. The applicants respectfully traverse these rejections.

None of the cited references teach or suggest a method for a thermo-electric cooler *coupled* to a laser diode including:

operating the thermo-electric cooler in one of at least a low power mode and a standard mode, the laser diode configured to transmit signals in the low power mode and the standard mode; and

switching between the low power mode and the standard mode, wherein: the low power mode maintains the laser diode at a temperature within a predetermined range of temperatures; and the standard mode maintains the laser diode at a temperature that corresponds to a predetermined wavelength of light output from the laser diode,

as required by independent claim 1 and generally required by independent claims 9 and 14.

Regarding claims 1 and 9, the Examiner states in his Office Action of October 4, 2002, p. 4, ¶2, that “Jang discloses method an apparatus for controlling the output level of a second harmonic generator by temperature compensation comprising a thermo electric cooler (112), a laser diode (100), switch (612),” However, the applicants note, and nothing in the Examiner’s argument suggests to the contrary, that Jang does not teach or suggest that laser diode **100** is coupled to thermo-electric cooler **112**. In fact, Jang makes clear, see, e.g., Figure 1 and column 1, lines 37-67, that thermo-electric cooler **112** is used to control nonlinear optical device **110** and not laser diode **100**. Thus, Jang does not teach or suggest a method for a thermo-electric cooler *coupled* to a laser diode.


Additionally, even assuming the Examiner is correct in asserting that Jang’s thermo-electric cooler operates in two different modes, and the applicants do not concede this point, Jang neither teaches nor suggests operating thermo-electric cooler **112** in either a *low power mode* or a *standard mode*, nor does Jang teach or suggest that the laser diode **100** is *configured to transmit signals in the low power mode and the standard mode*. Jang neither teaches nor suggests any relationship between the operating modes of thermo-electric cooler **112** and the operation of laser diode **100**.

Similarly, Jang neither teaches nor suggests that “the low power mode maintains the laser diode at a temperature within a predetermined range of temperatures; and the standard mode maintains the laser diode at a temperature that corresponds to a predetermined wavelength of light output from the laser diode,” as claimed by the applicants. As noted above, the operation of Jang’s thermo-electric cooler **112** affects nonlinear optical device **110** but not laser diode **100**.

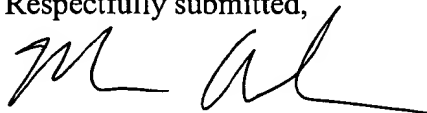
Accordingly, the applicants respectfully submit that independent claims 1, 9, and 14 are allowable over the cited references. Claims 2-8, 10-13, and 15-22 depend from claims 1, 9, and 14 respectively and are allowable for at least this reason.

In view of the amendments and remarks set forth herein, the application is believed to be in condition for allowance and a notice to that effect is solicited.

Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the examiner is requested to telephone the undersigned.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Box Non-Fee Amendment, Commissioner for Patents, Washington, D.C. 20231, on <u>Jan 6</u> , 2003.	
 Attorney for Applicant(s)	<u>1/6/03</u> Date of Signature

Respectfully submitted,



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Appendix: Version with Markings to Show Changes Made

In the Claims

Please substitute the following claims for the pending claims with the same number:

1 1. (Amended) A method for a thermo-electric cooler coupled to a laser diode, the
2 method comprising:
3 operating the thermo-electric cooler in one of at least a low power mode and a
4 standard mode, the laser diode configured to transmit signals in the low
5 power mode and the standard mode; and
6 switching between the low power mode and the standard mode, wherein:
7 the low power mode maintains [a]the laser diode at a temperature within a
8 predetermined range of temperatures; and
9 the standard mode maintains the laser diode at a temperature that
10 corresponds to a predetermined wavelength of light output from
11 the laser diode.

1 9. (Amended) An apparatus comprising:
2 means for operating a thermo-electric cooler coupled to a laser diode in one of a
3 low power mode and a standard mode; and
4 means for switching between the low power mode and the standard mode,
5 wherein the low power mode maintains the laser diode at a first
6 temperature within a predetermined range of temperatures and the
7 standard mode maintains the laser diode at a second temperature that
8 corresponds to a predetermined wavelength of light output from the laser
9 diode.

1 14. (Amended) An optical transceiver comprising:
2 a temperature circuit;

3 a thermo-electric cooler coupled to the temperature circuit; and
4 a laser diode coupled to the thermo-electric cooler, wherein the thermo-electric
5 cooler is responsive to inputs from the temperature circuit, the inputs
6 identifying one of at least a first mode and a second mode, wherein a
7 choice of the one of at least a first mode and a second mode is a function
8 of a performance requirement.